

Assessing factors that affect the outcomes of direct seeding riparian sites in southern Australia

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The restoration of riparian vegetation can improve not only the vegetation community but can also have multiple benefits for river health. As such, waterway managers in southern Australia invest considerable resources into riparian revegetation activities, which usually involve planting nursery-grown stock. Direct seeding is a cheaper revegetation technique in terms of plant and labour costs, but has been used less frequently as a number of factors can limit its effectiveness. Field trials testing the impacts of a range of operational activities in a research context are underway at sites around Melbourne, in order to elucidate ways to improve direct seeding outcomes in riparian areas.

As part of this program, a trial was established to test the effect of sowing season and post-sowing weeding on seedling establishment and survival over 12 months. Seeds were hand sown onto rectangular plots, with half of the plots sown in spring 2014 and half in autumn 2015. Each plot was divided into three, with one subplot hand weeded at monthly intervals for 4 months after sowing, one subplot sprayed at monthly intervals and one subplot sprayed at three-monthly intervals. Plots were monitored monthly for six months and then at six-monthly intervals, with individual seedling survival tracked over time.

Similar numbers of seedlings emerged from the spring and autumn sowings, but seedling numbers 12 months after sowing were greater in the spring sown plots (1.07 plants/m²) than in the autumn sown plots (0.37 plants/m²). More seedlings emerged in hand weeded subplots than sprayed subplots, so although expensive, hand weeding can be effective in improving rates of plant establishment. However overall establishment rates were low, with <5% of viable seed sown resulting in an established plant. Herbivory by native and feral animals and below-average rainfall limited plant survival and growth.